ONE60
Installation Manual

Version A
April 2005

http://www.oneaccess-net.com

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How to Read this Manual

The present document is broken down into 7 chapters.

Chapter 1 – Safety Instructions

This chapter provides the safety instructions for use and installation of the router.

Chapter 2 – Directives and Standards

This chapter details the list of standards, which the device complies with.

Chapter 3 – Router Description

This section describes the router front and rear panels and the associated technical characteristics.

Chapter 4 – Interface Description

This section describes the router interfaces.

Chapter 5 – Technical Characteristics

This section describes technical characteristics such as operating conditions.

Chapter 6 - Installation

This chapter describes how to mount a daughter-board and gives instructions to connect the router.

Chapter 7 – Power-up

This chapter describes the device power-up and how to monitor the self-test progress.

Appendix – Connection description

These chapters provide the pin-out of cables that are compatible with the router.

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1 Safety instruction

The following symbol instructs the user to consult the manual before any connection:

1.1 Connection to Power Supply

To connect the power supply, always follow these steps:

Connect the DC input jack from the power supply to the DC 5V power input on the rear panel of the router.

Connect the power supply to an AC electrical outlet (100-240 VAC). Plugging in the power supply turns on the router

Unplug the AC input before mounting/unmounting any part on the router. The AC input is the part you must disconnect first. For safety reasons, you shall be able to easily access this part.

1.2 Overcurrent Protection

The product requires that the building's electrical installation is designed for protection against short-circuit (over current) protection. A fuse or circuit breaker no larger than 240 VAC, 10A must be used on the phase conductors.

1.3 Safety Instruction

The add-on modules and daughter boards must be installed only in the products authorized by OneAccess and only by qualified personnel as recommended in the installation manual.

1.3.1 LAN Interface 100 Mbps (100BT)

The Ethernet 10/100 Mbps auto-sense has a 'SELV' (Safety Extra Low Voltage) interface. They must be used only for indoor applications, connected to a 10/100 Mbps interface, which has also the 'SELV' characteristics.

1.3.2 Serial Interface (Vxx)

The router has a serial line interface supporting V.11, V.28, V.35 or V.36, which is 'SELV'. It must be used only for indoor applications and connected to V.11, V.28, V.35 or V.36 interfaces which are also designed as 'SELV'.

1.3.3 ADSL/SDSL/G.SHDSL Interface (UPLINK)

The router has an ADSL/SDSL/G.SHDSL interface (TNV-1 type (Telephone Network Voltage)), designed for connection to a telephone line.

1.3.4 E1/T1 Interface (UPLINK)

This interface is 'TNV-1'.

1.3.5 ISDN S0 Backup Interface (ISDN)

This interface is 'TNV-1'. It must be only connected to an ISDN S0 interface.

1.3.6 PSTN Modem Interface (PSTN)

The analog MODEM interface V.32(bis)/V.34/V.90/V.92 is 'TNV-1'. It must be connected to a standard telephone line.

1.3.7 RS-232 Interface (RS 232)

The daughter board provides 2 x RS 232 interfaces, which are 'SELV'. They must be used only for indoor applications and connected to RS 232 interfaces which are also designed as 'SELV'.

2 Directives and Standards

2.1 Declaration of Conformity

Déclaration de conformité suivant les directives R&TTE, DBT et CEM
Declaration of Conformity according to R&TTE, LVD and EMC directives

ONE60

Routeur et adaptateur de réseau / *Router and network adapter*

Tension d'alimentation / *Supply voltage* : **90-250 Vac, 7,5 W A, 50-60 Hz (5V – 1,5 A)**
Avec les cartes / *with the cards* : ADSL board, RNIS board (S0 backup)

Nous déclarons que ce produit est présumé conforme aux exigences essentielles applicables des directives suivantes du Parlement Européen et du Conseil :

- la Directive R&TTE 1999/5/CE, du 9 mars 1999, concernant les équipements hertziens et les équipements terminaux de télécommunications et la reconnaissance mutuelle de leur conformité ;
- la Directive Basse Tension 73/23/CEE du 19 février 1973 concernant le rapprochement des législations des Etats Membres relatives au matériel électrique destiné à être employé dans certaines limites de tension ;
- la Directive CEM 89/336/CEE du 3 mai 1989 concernant le rapprochement des législations des États membres relatives à la compatibilité électromagnétique, modifiée par la Directive 92/31/CEE du 28 avril 1992.

We declare that this product has been given a presumption of conformity with the applicable essential requirements of the following directives of the European Parliament and of the Council :

- *R&TTE Directive 1999/5/EC of march 9th 1999, on radio equipment and telecommunication terminal equipment and the mutual recognition of their conformity ;*
- *Low Voltage Directive 73/23/EEC of february 19th 1973, on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits ;*
- *EMC Directive 89/336/EEC of may 3rd 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility, amended by Directive 92/31/EEC of april 28th 1992.*

Nous déclarons que les normes harmonisées suivantes ont été utilisées pour démontrer cette présomption de conformité et ont donné lieu aux rapports de tests suivants, disponibles sur demande.

We declare that the following harmonised standards were used to demonstrate this presumption of conformity and the results are included in the following tests reports, which can be made available on request.

EN60950 : 2000	**Rapport / *Report* : 03ME03475-03302003**
EN 300386 V1.3.1 (2001)	**Rapport / *Report* : 177005 AI/EN/DK - 177006 EN/DK**
EN 55022 (98) - FCC Part 15 Class B	**Rapport / *Report* : 177005 AI/EN/DK - 177006 EN/DK**
EN 61000-3-2 (2000)	**Rapport / *Report* : 177005 AI/EN/DK - 177006 EN/DK**
EN 61000-3-3 (2001)	**Rapport / *Report* : 177005 AI/EN/DK - 177006 EN/DK**
EN 61000-4-2 (2001)	**Rapport / *Report* : 177005 AI/EN/DK - 177006 EN/DK**
EN 61000-4-3 (2002)	**Rapport / *Report* : 177005 AI/EN/DK - 177006 EN/DK**
EN 61000-4-4 (2001)	**Rapport / *Report* : 177005 AI/EN/DK - 177006 EN/DK**
EN 61000-4-5 (2001)	**Rapport / *Report* : 177005 AI/EN/DK - 177006 EN/DK**
EN 61000-4-6 (2001)	**Rapport / *Report* : 177005 AI/EN/DK - 177006 EN/DK**
EN 61000-4-11 (2001)	**Rapport / *Report* : 177005 AI/EN/DK - 177006 EN/DK**

Laboratoire UL France pour la Sécurité – UL France Laboratory for Security
Laboratoire Gyl Technologie pour CEM – Gyl Technologie Laboratory for CEM

Le produit est marqué du symbole « CE » en application des directives citées ci-dessus.
The product is marked with the « CE » symbol in accordance with the directives mentionned above.

Responsable autorisé / *Authorized signatory* : Directeur Général / *Chief Operating Officer*

Nom / *Name* : Denis BEHAGHEL

ONEACCESS NETWORKS

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RCS Nanterre B 439 441 999
TVA FR 76 439 441 999

2.2 Standards

The ONE 60 is designed in conformity with the standards listed hereafter, provided that the basic housing, modules, interface boards and installation kits are mounted as recommended in the corresponding installation manual(s).

Safety	
EN60950 (2000)	Safety of information technology equipment, including electrical business equipment.

Environment :	
Climatic, physico chemical, mechanic, packing	
ETS 300 019-1 (95)	Environmental conditions and environmental testing for telecommunication equipment
In use : Temperature Controlled	
Test specification : - class T3.1 (normal) - class T3.1 (exceptionnal)	Part 1, Classification of environmental conditions
Storage: partly temperature controlled	
T1.1	Part 2, Specification of environmental test
Transportation: careful Transportation	
T2.3	

Electromagnetic Compatibility, immunity	
EN 55024	Information technology equipment immunity characteristics. Limits and methods of measurement.
EN 55022 class B (98)	Limits and methods of measurement of radio interference characteristics of information technology equipment .
FCC part 15 class B	Federal Communication Commission regulation (USA).
EN 300386 V.1.3.1 (2001)	EMC Requirements

2.3 FCC Statement (USA)

The United States Federal Communications Commission (in 47 CFR 15.105) has specified that the following notice be brought to the attention of users of this product:

This device has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This device generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this device does cause harmful interference to radio or television reception, which can be determined by turning the device off and on, the user is encouraged to try to correct the interference's by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the device and the receiver.
- Connect the device into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The user may find the following booklet, prepared by the Federal Communications Commission, helpful: How to Identify and Resolve Radio/TV Interference Problems. This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402, Stock No. 004-000-00345-4.

Use of a shielded cable is required to comply within Class B limits of Part 15 of FCC Rules.

Pursuant to Part 15.21 of the FCC Rules, any changes or modifications to this device not expressly approved by OneAccess may cause, harmful interference and void the FCC authorization to operate this device.

3 Router Description

3.1 Hardware Description

The ONE 60 is a powerful router delivering advanced IP services and management features. Compact and modular, the router can be equipped with an extensive set of interfaces. In addition to its router functions, the product also provides interworking functions such FRF.5, FRF.8, X.25 over TCP/IP (XOT) and PAD over XOT.

The basic ONE 60 configuration is equipped with (the bolded keywords in parentheses indicate the keywords printed on the router back panel):

- 1 serial port for Configuration and Debug (CONSOLE),
- 1 LAN access 10/100 Mbps (100BT),
- 1 Uplink access: E1/T1 or ADSL or G.SHDSL (2 or 4 wires) or SDSL (UPLINK).
-

The following functions/interfaces can be optionally offered:

- 1 Serial access V.28/V.11/V.35/V.36, in DTE or DCE mode, with auto detection of the electrical layer (Vxx),
- 1 'IPSEC' encryption accelerator,
- 1 managed switch with 5 ports (SWITCH).
-

The addition of a daughter board enables the installation of one of the following functions:

- 1 S0 ISDN Backup (ISDN),
- 1 Modem access (V.32, V.32bis, V.34, V.90, V.92) (PSTN),
- 2 RS 232 accesses V.28 (RS 232.
-

The different combinations are defined when ordering the router.

3.2 Front Panel

The front panel is provided with LEDS, which inform about the status of several router functions.

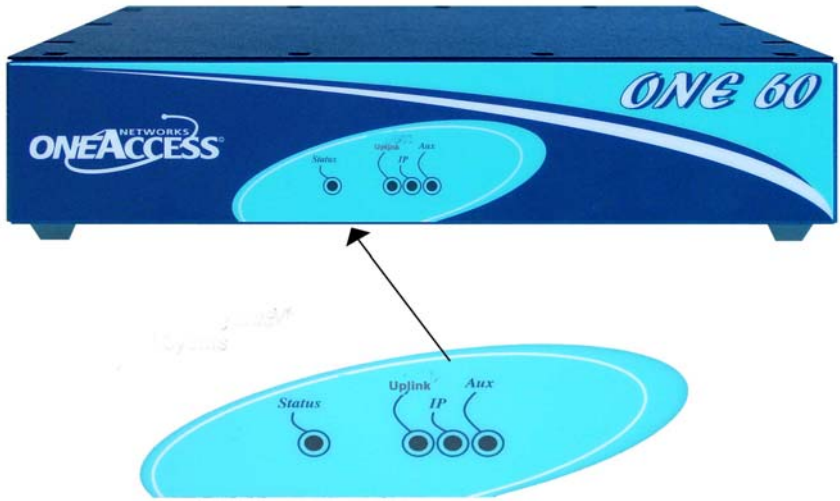


Figure 2. Front panel

LED	OFF	Green	Red	Orange	Blinking Green
Status	Switched Off	Switched On & Operational	Switched On & Not operational		Reboot in progress
Uplink	Not used	Synchronized	Loss of synchronization		Synchronization in progress
IP	Not used	All IP Interfaces are up	All IP interfaces are down	One IP Interface is not up (Connection failure on the LAN or WAN)	
Aux	Not used	Interworking function is operational (FRF, CES)	Failure on Data Service		

3.3 Rear Panel

All the connectors are located on the rear panel:

- Input for the external power supply connector (DC input jack, 5V-1,8A),
- Configuration and Debug port (RJ45) (CONSOLE),
- 1 Serial access port (MDR36 connector) (VXX),
- 1 xDSL or E1 access port (RJ45) (UPLINK),
- 1 LAN access 10/100 Mbps port (RJ45) (100BT),
- 1 S0 Backup access (RJ45) (ISDN) or,
- 1 Modem access (RJ11) (PSTN) and/or 2 x RS 232 access ports (RJ45) (RS 232),
- 5 port Ethernet switch (RJ45) (SWITCH).

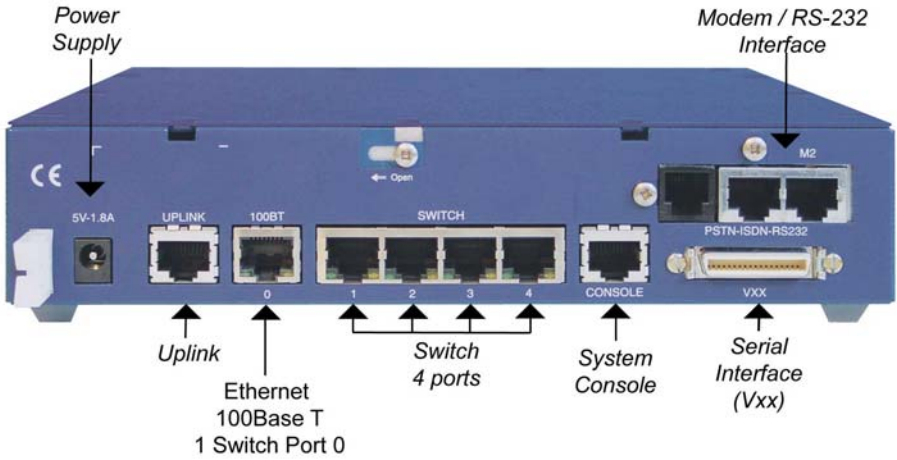


Figure 3. Rear panel equipped with a modem/RS 232 daughter board

Depending on the ordered configuration of the system, the rear panel may vary.

3.4 Mother Board

The mother board provides:

- Console port,
- 1 Fast Ethernet 10/100 Mbps,
- LEDs,
- Slot of the Uplink daughter board,
- Slot for S0 back up, PSTN modem and 2 x RS 232 daughter boards.

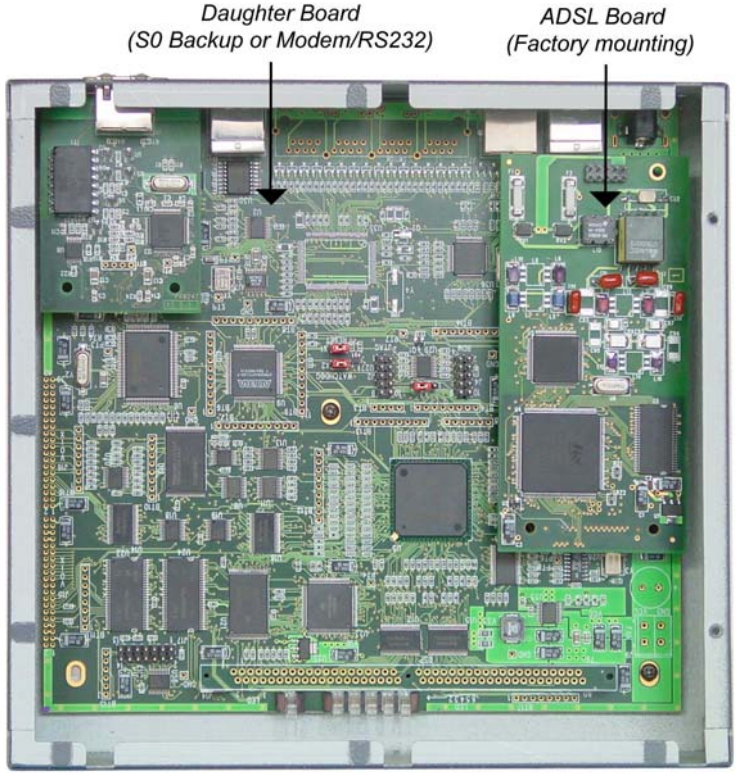


Figure 4. Top view of the ONE60 mother board

Depending on the ordered configuration of the system, the mother board may vary.

3.5 Configuration Identification

The different device configurations are identified by adding one or several letters to the device denomination and printed on the labeling sticker glued on the bottom of the router.

Options codification:

- G: G.SHDSL 2 wires access or SDSL
- D: G.SHDSL 4 wires access
- A: ADSL access, 2 possible versions:
  - ADSL 50-AC : ADSL board Annex A
  - ADSL 50-AC : ADSL board Annex B and B-DT with "dying gasp" function
- P: (for PRI) E1/T1 Uplink access
- V: (V.xx) serial interface supporting V.11/V.35/V.28/V.36
- S: (Security) IPSEC encryption accelerator
- E: Ethernet Switch function
- B: S0 Backup or Modem/RS 232 function supported.

Example:

ONE60GE is a ONE60 router equipped with:

- 1 G.SHDSL 2 wires access,
- Ethernet Switch function.

4 Interface Description

4.1 LAN Interface 10/100 Mbps (100 BT)

4.1.1 Characteristics

- 10/100 Mbits/s,
- Half or full duplex,
- Auto-negotiation.

4.1.2 Meaning of LED Colors

Lit green led	Link active
Blinking yellow Led	Traffic in progress

4.1.3 Connector Pinout

RJ45 Connector:

Pin	Signal	Pin	Signal
1	TD (+)	5	NC
2	TD (-)	6	RD (-)
3	RD (+)	7	NC
4	NC	8	NC

4.1.4 Cables

A standard Ethernet cable is needed (shielded UTP Cat. 5).

4.2 Serial Interface (Vxx)

4.2.1 Characteristics

- Interface: RS 232, V.36, X.24, V.35, RS 449, EIA530, RIA530-A,
- DCE and DTE mode,
- Clock mode: contra-directional et co-directional,
- Automatic configuration of the characteristics of the serial port thanks to the signature of the cable connected.

4.2.2 Cables

The type of cable used on the serial line must correspond to the parameters provided in the router configuration.

The installation of a cable on the serial line sets the interface mode (DTE or DCE) and type (V.11 or V.28 or V.35 or V.36).

The automatic detection of the type of the used cable for the serial interface is performed when the device is powered up.

It is mandatory to connect both sides of the serial interface (Vxx) cable before powering up the router.

All serial cables are defined in Appendix A.

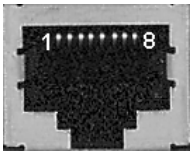
4.3 Debug Interface (CONSOLE)

4.3.1 Characteristics

- RS 232,
- 9,600 bps,
- 8 bits, 1 bit for stop, no parity.

4.3.2 Connector Pinout

RJ45 Connector:



Pin	Signal	Pin	Signal
1	TX	5	NC
2	RX	6	NC
3	GND	7	NC
4	NC	8	NC

4.3.3 Cables

The console cable is defined in Appendix B.

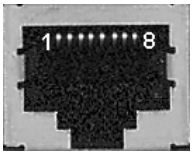
4.4 ADSL Interface (UPLINK)

4.4.1 Characteristics

- ANSI T1.413 issue 2,
- ITU G.992.1 (Gdmt Annex A, B et C),
- ITU G.992.2 (Glit),
- Dying gasp (on ADSL Appendix B).

4.4.2 Connector Pinout

RJ45 Connector:



Pin	Signal	Pin	Signal
1	NC	5	RING
2	NC	6	NC
3	NC	7	NC
4	TIP	8	NC

4.4.3 Cables

The cable of connection to the ADSL must be made using a standard telephone cable.

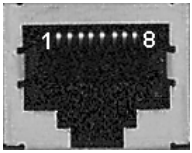
4.5 G.SHDSL/SDSL Interface (UPLINK)

4.5.1 Characteristics

- Line coding: 2B1Q or PAM, ATM-based,
- ETSI TS 101 135, ITU-T G.991.1, ANSI TR-28 for 2B1Q coding (single pair),
- ITU-T G.991.2 for the G.SHDSL (Appendix A and B), 2 or 4 wires,
- Throughput:
  - SDSL 2B1Q: 144 kbps up to 2,320 kbps,
  - SHDSL 2 wires: 192 kbps up to 2,320 kbps,
  - SHDSL 4 wires: 384 kbps up to 4,640 kbps.

4.5.2 Connector Pinout

RJ45 Connector:



Pin	Signal	Pin	Signal
1	TIP (Line 2 / 4 wires)	5	RING (Line 1)
2	RING (Line 2 / 4 wires)	6	NC
3	NC	7	NC
4	TIP (Line 1)	8	NC

Line 2 is intended for the optional G.SHDSL mode with 4 wires.

4.5.3 Cables

The cable of the G.SHDSL interface must be carried out using a standard telephone cable according to the wiring described above.

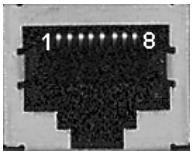
4.6 E1/T1 Interface (UPLINK)

4.6.1 Characteristics

- E1 or T1,
- ANSI T1. 403 and FCC68,
- ITU-T I.431, G.703, G.736 (E1), G.823 (E1), G.704.

4.6.2 Connector Pinout

RJ45 Connector:



Pin	Signal	Pin	Signal
1	RX (+)	5	TX (-)
2	RX (-)	6	NC
3	NC	7	NC
4	TX (+)	8	NC

4.6.3 Cables

The cord used for access E1/T1 is a shielded cord category 5, including 2 twisted pairs: emission (4-5) and reception (1-2).

4.7 Ethernet Switch Interface (SWITCH)

4.7.1 Characteristics

The switch Ethernet function offers 4 ports Ethernet. Every port can be switched and/or routed.

- 10/100 Mbits/s,
- Half or full duplex,
- Auto-negotiation,
- Auto MDI/MDIX (detection whether the cable is crossed or not).

4.7.2 Meaning of LED Colors

Green LED Lit	Link active
Blinking yellow LED	Traffic in progress

4.7.3 Connector Pinout

RJ45 Connector:

Pin	Signal	Pin	Signal
1	TD (+)	5	NC
2	TD (-)	6	RD (-)
3	RD (+)	7	NC
4	NC	8	NC

4.7.4 Cables

The cables are shielded, crossover/straight cables with 4 twisted pairs. The switch supports auto detection of crossover/straight cable ('auto-MDI/MDI-X detection'); the transmission pairs are (1-2) and receive pairs are (3-6).

4.8 S0 Interface (ISDN)

4.8.1 Characteristics

The interface provides an ISDN access designed for data services.

- TE Mode only,
- Full duplex, 2B + D channels compliant with ITU-T I.430.

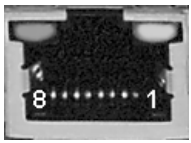
4.8.2 Meaning of LED Colors

2 LED indicate the interface status.

Green LED	Off	Level 1 deactivated
	On	Level 1 activated
Yellow LED	Off	No communication
	On	Communication in progress

4.8.3 Connector Pinout

RJ45 Connector:



Pin	Signal	Pin	Signal
1	NC	5	RX (-)
2	NC	6	TX (-)
3	TX (+)	7	NC
4	RX (+)	8	NC

4.8.4 Cables

The ISDN cord is an unshielded cable including 2 twisted pairs: emission (3-6) and reception pairs (4-5).

4.9 PSTN Modem Interface (PSTN)

4.9.1 Characteristics

The router can be equipped with a daughter board delivering an access to the PSTN via an integrated analog modem. The modem has the following characteristics:

- Compatible with V.32, V.32bis, V.34, V.90 and V.92,
- Compliant with TBR21.

4.9.2 Connector Pinout

RJ11 connector:

Pin	Signal
1	NC
2	RING
3	TIP
4	NC

4.9.3 Cables

The cable is a standard telephone cord with one twisted pair.

4.10 RS 232 Interface (RS 232)

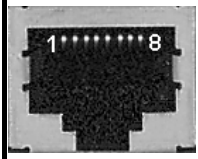
4.10.1 Characteristics

An extension board allows to provide 2 x RS 232 access.

- Synchronous mode: DCE or DTE mode is supported (configuration with jumpers),
- Asynchronous Mode (115 kbits/s),
- Electrical Interface V.28,
- 8 signals managed : 102, 103, 104, 105 (RTS) , 106 , 108 (RTS), 109 (CD), 115.

4.10.2 Connector Pinout

RJ45 Connector:



Pin	Signal	Pin	Signal
1	115 / RXC	5	103 / SD
2	105 / DPE	6	108 / ETDP
3	104 / RD	7	102 / GND
4	109 / DS	8	106 / PAE

4.10.3 RS 232 Configuration

Each RS 232 interface can be separately configured in DTE or DCE mode when using the synchronous mode:

	PORT 0	PORT 1
DCE	X3 1 DCE_DTE	X2 1 DCE_DTE
DTE	X3 1 DCE_DTE	X2 1 DCE_DTE

When using the asynchronous mode, the jumper connection is not relevant.

4.10.4 Cables

The cable type must correspond to the desired more (DCE or DTE). All types of cord for RS 232 port are defined in Appendix C.

5 Technical Characteristics

5.1 Climatic Environment

Operating Environment:

Temperature	0° C ≤ T ≤ 45°C
Relative Humidity (HR)	5% ≤ HR ≤ 80%
Absolute Humidity	≤ 24g / m3
Altitude	≤ 2500 m

Storage Environment:

Temperature	-25° C to 55°C
Relative Humidity (HR)	5% ≤ HR ≤ 80%
Absolute Humidity	≤ 24g / m3
Altitude	≤ 2500 m

5.2 Power Supply

- External Power Supply 100-240 VAC / 9W (5V - 1,8A).
- External Power Supply 48 VDC

5.3 Dimensions

The dimensions of the housing are:

Width	215 mm
Height	1 U
Depth	200 mm

6 Installation

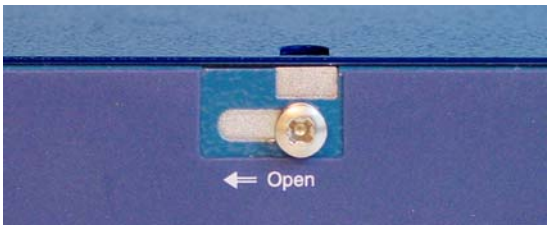
Always unplug the power cable before any hardware maintenance operation.

This chapter describes mounting/unmounting operations for optional modules. The user should be aware that the router software auto-detects on-board modules and interfaces.

All vacant slots of the rear panel must be obstructed with suitable face-plates in order to guarantee the respect of the EMC standards as defined in Chapter 2. Directives and Standard=s.

6.1 Opening the Chassis

- By means of a Posidriv #1 screwdriver, unlock the screw without removing it, (half a turn should be sufficient for unlocking the screw). Make the screw slide to the left hand side (by following the arrow next to the 'Open' mark) (1),
- Slide the cover from the front to back panel as indicated on the figure below. (2),
- Remove the cover (3).



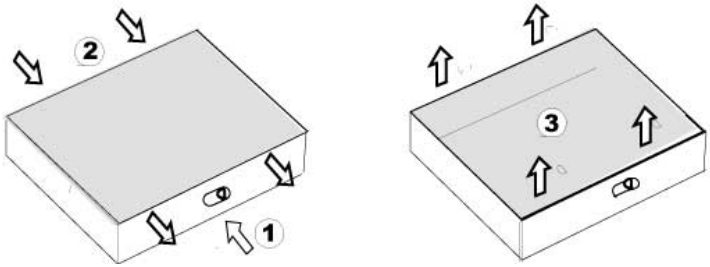


Figure 5. Opening the chassis

6.2 Extension Board

The installation or exchange of a daughter board requires opening the chassis.

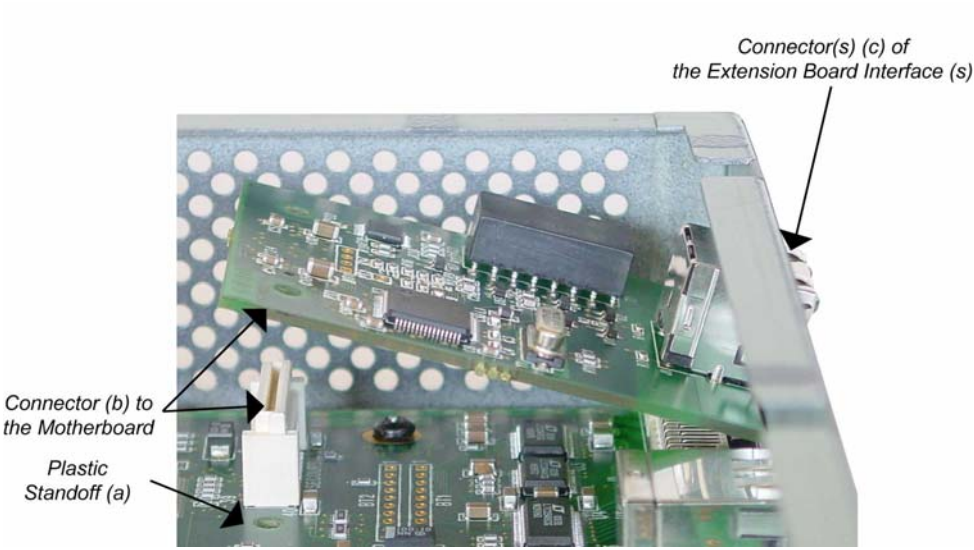


Figure 6. Removal-Installation of an Extension Board

6.2.1 Removal on an Extension Board

- Unlock and remove the screws (a) of the module on the rear panel,
- Unlock and remove the screws (b) of the module printed circuit,
- Loosen the module from the motherboard connector by gently separating the motherboard and the module,
- Rise up the board.

6.2.2 Installation on an Extension Board

- Remove the protective faceplate of the slot,
- Position the module so that the module metallic faceplate fits in the place made available by the removal of the faceplate,
- Lower the module while aligning the module with the motherboard connector,
- Plug the module into the motherboard connector,
- Tighten the screws (b) on the printed circuit,
- Tighten the screws (a) on the router rear panel.

6.3 Connections

The external power supply is connected on the rear panel of the device. The external power supply is delivered with the router package.

- Connect the 'jack' connector of the external power supply to the connector marked '5V-1,8A' device connector,
- Secure the power supply connection by installing the DC power supply cable into the plastic ring as indicated on the following figure.

Figure 7. Connection of the DC Input Jack

The device shall not be used with another power supply than a power supply recommended by OneAccess.

7 Power up

To power up the device, always follow these steps:

- Connect the DC power input jack from the power supply to the DC power input of the rear panel of the router,
- Connect the power supply to the AC mains (100-240 VAC).

Few seconds after power-on, the device performs a series of self-tests and loads the software into memory (RAM), during which the 'STATUS' LED on the front panel blinks.

At the end of software loading (about 30 seconds):

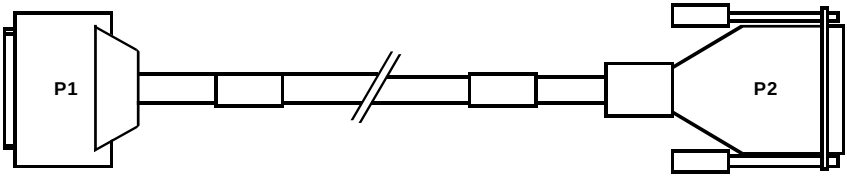
- The 'STATUS' LED light remains steady green if software initialization was successful,
- The 'STATUS' LED remains blinking in case of software absence or error during software loading.

Refer to the Software and ONEOS User Guide for more information.

Appendix A - Serial Interface Cords

A1 V.24/V.28 DTE CABLE

Pin Connection Table reference: ***4 021 863 00 Ed A***

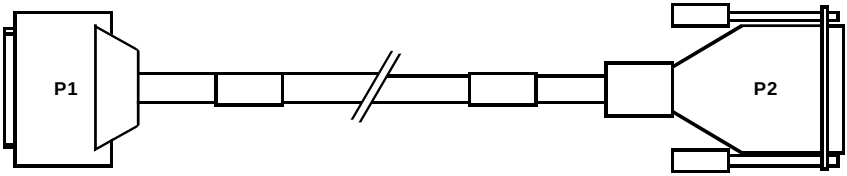


- P1 - **MDR 36 Pts**	SIGNAL	- P2- **SUB-D 25 Pts male**
Casing	Screening	1 + Casing
1	103 (SD)	2
2	113 (TXCE)	24
3	114 (TXC)	15
4	115 (RXC)	17
5	104 (RD)	3
6		
7	105 (RTS)	4
8	108 (DTR)	20
9		
10	109 (CD)	8
11	107 (DSR)	6
12	106 (CTS)	5
13	141 (LL)	18
14	142 (TM)	25
15		
16	102	7
17	Ident0	
18	Ident2*	
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31	125 (IA)	22
32	140 (RL)	21
33		
34	102	
35	Ident1*	
36	Ident3	

* signal looped to pin 34 for cable auto detection

A.2 V.24/V.28 DCE CORD

Catalog reference: ***4 021 864 00 Ed A***

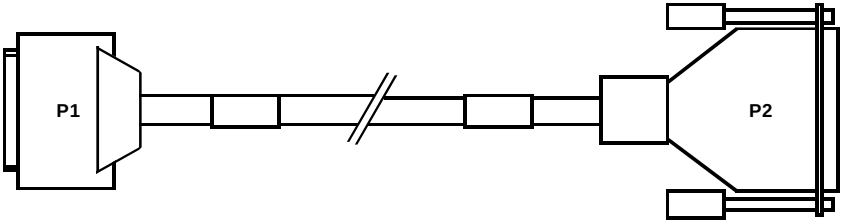


- P1 - **MDR 36 Pts**	SIGNAL	- P2- **SUB-D 25 Pts female**
Casing	Screening	1 + Casing
1	104 (RD)	3
2	115 (RXC)	17
3	114 (TXC)	15
4	113 (RXCE)	24
5	103 (SD)	2
6		
7	106 (CTS)	5
8	107 (DSR)	6
9		
10	109 (CD)	8
11	108 (DTR)	20
12	105 (RTS)	4
13	125 (IA)	22
14	140 (RL)	21
15		
16	102	7
17	Ident0*	
18	Ident2*	
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31	141 (LL)	**18**
32	142 (TM)	**25**
33		
34	102	
35	Ident1	
36	Ident3	

* signal looped to pin 34 for cable auto detection

A.3 V.36 DTE CORD

Catalog reference: ***4 021 865 00 Ed A***

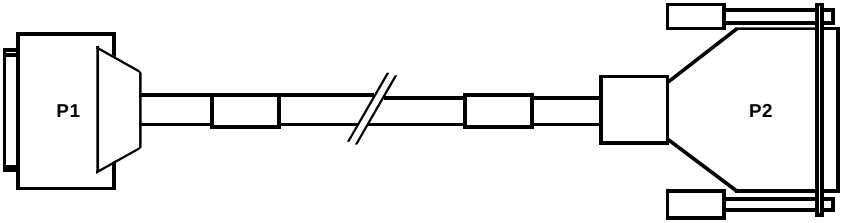


- P1 - **MDR 36 Pts**	SIGNAL	- P2- **SUB-D 37 Pts male**
Casing	Screening	1 + Casing
1	103A (SD)	4
2	113A (TXCE)	17
3	114A (TXC)	5
4	115A (RXC)	8
5	104A (RD)	6
6		
7	105A (RTS)	7
8	108A (DTR)	12
9		
10	109A (CD)	13
11	107A (DSR)	11
12	106A (CTS)	9
13	141 (LL)	10
14	142 (TM)	18
15	102a	37
16	102	19
17	Ident0	
18	Ident2*	
19	103B (SD)	22
20	113B (TXCE)	35
21	114B (TXC)	23
22	115B (RXC)	26
23	104B (RD)	24
24		
25	105B (RTS)	25
26	108B (DTR)	30
27		
28	109B (CD)	31
29	107B (DSR)	29
30	106B (CTS)	27
31	125 (IA)	15
32	140 (RL)	14
33	102b	20
34	102	
35	Ident1	
36	Ident3	

* signal looped to pin 34 for cable auto detection

A.4 V.36 DCE CORD

Catalog reference: **4 021 866 00 Ed A**

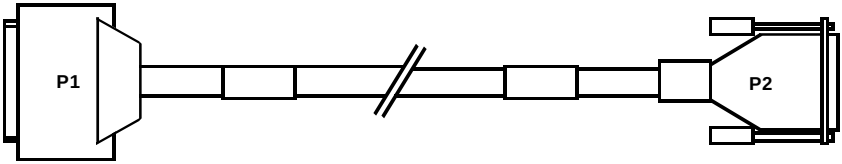


- P1 - **MDR 36 Pts**	SIGNAL	- P2- **SUB-D 37 Pts female**
Casing	Screening	1 + Casing
1	104A (RD)	6
2	115A (RXC)	8
3	114A (TXC)	5
4	113A (TXCE)	17
5	103A (SD)	4
6		
7	106A (CTS)	9
8	107A (DSR)	11
9		
10	109A (CD)	13
11	108A (DTR)	12
12	105A (RTS)	7
13	125 (IA)	15
14	140 (RL)	14
15	102b	20
16	102	19
17	Ident0*	
18	Ident2	
19	104B (RD)	24
20	115B (RXC)	26
21	114B (TXC)	23
22	113B (TXCE)	35
23	103B (SD)	22
24		
25	106B (CTS)	27
26	107B (DSR)	29
27		
28	109B (CD)	31
29	108B (DTR)	30
30	105B (RTS)	25
31	141 (LL)	10
32	142 (TM)	18
33	102a	37
34	102	
35	Ident1*	
36	Ident3	

* signal looped to pin 34 for cable auto detection

A.5 X.21/V.11 DTE CORD

Catalog reference: ***4 021 867 00 Ed A***

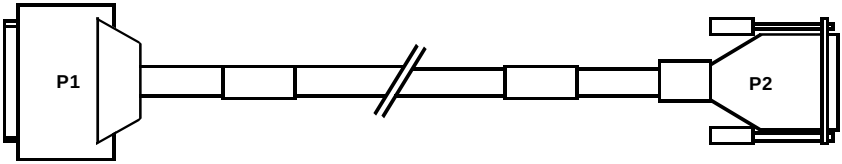


- P1 - **MDR 36 Pts**	SIGNAL	- P2- **SUB-D 15 Pts male**
Casing	Screening	1 + Casing
1	103 (TA)	2
2	113 (XA)	7
3		
4	115 (SA)	6
5	104 (RA)	4
6		
7	105 (CA)	3
8		
9		
10		
11		
12	109 (IA)	5
13		
14		
15		
16	102	8
17	Ident0	
18	Ident2	
19	103 (TB)	9
20	113 (XB)	14
21		
22	115 (SB)	13
23	104 (RB)	11
24		
25	105 (CB)	10
26		
27		
28		
29		
30	109 (IB)	12
31		
32		
33		
34	102	
35	Ident1*	
36	Ident3	

* signal looped to pin 34 for cable auto detection

A.6 X.21/V.11 DCE CORD

Catalog reference: ***4 021 868 00 Ed A***

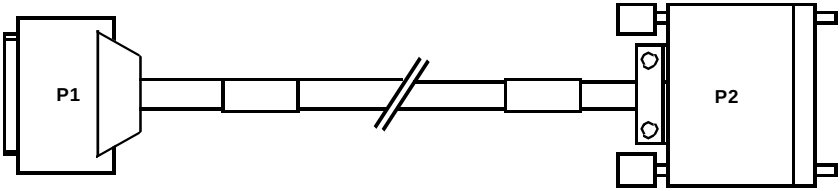


- P1 - **MDR 36 Pts**	SIGNAL	- P2- **SUB-D 15 Pts female**
Casing	Screening	1 + Casing
1	104 (RA)	4
2	115 (SA)	6
3		
4	113 (XA)	7
5	103 (TA)	2
6		
7	109 (IA)	5
8		
9		
10		
11		
12	105 (CA)	3
13		
14		
15		
16	102	8
17	Ident0*	
18	Ident2	
19	104 (RB)	11
20	115 (SB)	13
21		
22	113 (XB)	14
23	103 (TB)	9
24		
25	109 (IB)	12
26		
27		
28		
29		
30	105 (CB)	10
31		
32		
33		
34	102	
35	Ident1	
36	Ident3	

- signal looped to pin 34 for cable auto detection

A.7 V.35 DTE-1 mm CORD

Catalog reference: ***4 022 170 00 Ed A***

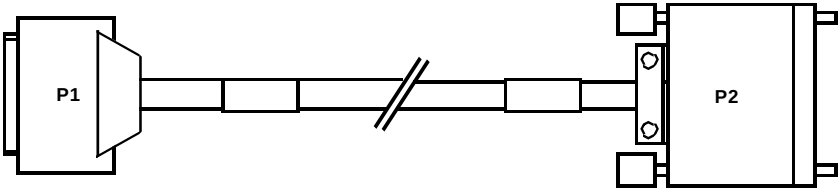


- P1 - **MDR 36 Pts**	SIGNAL	- P2- **male connector**
Casing	Screening	A + Casing
1	103A (SD)	P
2	113A (TXCE)	U
3	114A (TXC)	Y
4	115A (RXC)	V
5	104A (RD)	R
6		
7	105A (RTS)	C
8	108A (DTR)	H
9		
10	109A (CD)	F
11	107A (DSR)	E
12	106A (CTS)	D
13	141 (LL)	L
14	142 (TM)	NN
15		
16	102	B
17	Ident0	
18	Ident2*	
19	103B (SD)	S
20	113B (TXCE)	W
21	114B (TXC)	AA
22	115B (RXC)	X
23	104B (RD)	T
24		
25		
26		
27		
28		
29		
30		
31	125 (IA)	J
32	140 (RL)	N
33		
34	102	
35	Ident1	
36	Ident3*	

*signal looped to pin 34 for cable auto detection

A.8 V.35 DCE-1 mm CORD

Catalog reference: ***4 022 171 00 Ed A***

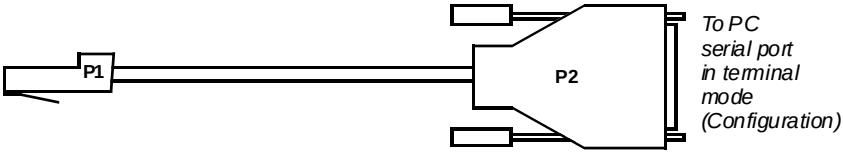


- P1 - **MDR 36 Pts**	SIGNAL	- P2- **female connector**
Casing	Screening	A + Casing
1	104A (RD)	R
2	115A (RXC)	V
3	114A (TXC)	Y
4	113A (TXCE)	U
5	103A (SD)	P
6		
7	106A (CTS)	D
8	107A (DSR)	E
9		
10	109A (CD)	F
11	108A (DTR)	H
12	105A (RTS)	C
13	125 (IA)	J
14	140 (RL)	N
15		
16	102	B
17	Ident0*	
18	Ident2	
19	104A (RD)	T
20	115B (RXC)	X
21	114B (TXC)	AA
22	113B (TXCE)	W
23	103B (SD)	S
24		
25		
26		
27		
28		
29		
30		
31	141 (LL)	L
32	142 (TM)	NN
33		
34	102	
35	Ident1*	
36	Ident3*	

* signal looped to pin 34 for cable auto detection

Appendix B - Console Cord

Catalog reference: **4 022 332 B 00 Ed A**

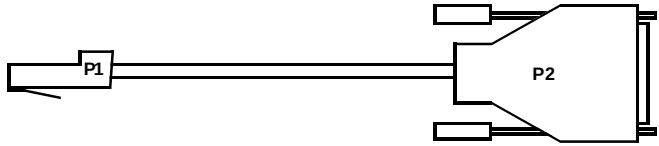


RJ45 - P1	SIGNAL	SUB-D 9 Pts Female - P2
1	TX	2
2	RX	3
3	GND	5

Appendix C - interface RS 232 Cord

C-1. V.28 / RS 232 DTE CABLE

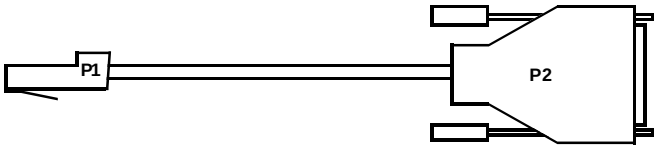
Catalog reference : ***4022 815 B 00***



- P1 - RJ45	SIGNAL	- P2 - SUB-D 25 Pts male
1	115 (RXC)	17
2	106 (CTS)	5
3	103 (SD)	2
4	108 (DTR)	20
5	104 (RD)	3
6	109 (CD)	8
7	102	7
8	105 (RTS)	4
Screening		Casing

C-2. V.28 / RS 232 DCE Cord

Catalog reference: ***9594 508 07146***



- P1 - RJ45	SIGNAL	- P2 - SUB-D 25 Pts female
1	115 (RXC)	17
2	105 (RTS)	4
3	104 (RD)	3
4	109 (CD)	8
5	103 (SD)	2
6	108 (DTR)	20
7	102	7
8	106 (CTS)	5
Screening		Casing